

RUNNING THE LINE OF UNCLE SAM'S ALASKA RAILROAD



Travelling by raft on the White River. This raft made a trip of 190 miles.

Perilous Task of the Surveyors Who Are Planning the 490 Mile Government Road From Resurrection Bay to Fairbanks

A LITTLE less than a year ago the United States Government sent to Alaska a commission to direct the survey for a Government railroad reaching inland and generally north from Resurrection Bay to Fairbanks, a distance of something over 490 miles. One of the men chosen for this momentous task was Thomas Riggs, Jr., of the United States Coast and Geodetic Survey. Mr. Riggs was selected because of his familiarity with the region and on account of the part he took in running the Alaskan-Canadian boundary line, finished but two years ago.

Associated with Mr. Riggs in the railroad survey were Lieut. Frederick Mears of the United States army and William C. Edes. As a result of the work done last summer and data previously gathered in the same territory by other expeditions of the Coast and Geodetic Survey, the route now to be followed is to run in part along the Susitna and the Cantwell rivers and through the foothills of towering Mount McKinley. The experts predict great prosperity for the whole territory and declare that the ultimate cost of \$26,800,000 for the system complete will be amply compensated for by reason of the resulting benefits.

Whatever may be the ultimate economic significance of this Government-owned railroad in Alaska, there should be no question about our present interest in the work done in running the preliminary survey and that which will later follow as the steel rails are led further and further northward in that rugged region.

From past experience, it has been amply established that surveying in Alaska is apt to be full of thrills. First, the open season is a short one and a great deal of action has to be crowded into a brief period by the surveyor. His is not the task merely of the explorer who pushes ahead by the shortest route to his objective, but instead is that of choosing the easiest gradients for the intrusive locomotive, spanning the shortest valleys and bridging the rivers or torrential streams where the foundations or the approaches can be built for the least amount of money compatible with present strength and durability.

Some of the most towering peaks in North America are in southern Alaska and from their snowclad shoulders in the spring and summer the waters flow seaward in great volume and with much violence. Then the stricken timber is washed down into the flooded channels, and this wealth of logs rushes onward like a veritable avalanche when the way is clear, or what is even more menacing, these millions of mighty sticks jam in some narrow pass, penning up the waters and themselves until ruptured by the titanic forces they have halted for the while. Then as the jam is broken onward tears the roaring stream and the whirling timber until the broad reach of some wide channel robs the torrent of its turbulent fury.

The surveyors have not only to avoid these dangers in planning the right of way and the points for bridging, but their work will demand that they actually cross some of these streams when blazing the way for the line. The waters are icy and the currents swift, while means of rescue are apt to be woefully scant.

Mr. Riggs has given us some spectacular instances of the hazards confronting the civil engineer in that part of the world, and what has been experienced in the past up there is a pretty good index of the difficulties to be faced in running the line inland from the rail head of the existing road, seventy-one miles long, which will form the nucleus of this great Government undertaking.

But torrential rivers loaded with millions of logs are not the only forms

of titanic masses with which the railroad builder in Alaska has to count. There are the slow marching but irresistibly advancing mountains of ice, the glaciers, and some of these have taken possession of the very valleys through which the railroad engineer would preferably choose to lead his line. Indeed the Copper River and Northwestern Railroad in Alaska gives a pretty good notion of some of the difficulties to be faced by the surveyors and provided for by the Government when it comes to actual construction. That road is 195 miles long and yet in that distance there are



The long and the short of it. Two of the men on the Alaska boundary survey.

nearly 275 trestles, bridges, tunnels and fills. Indeed there are sections where a mile of construction has cost as much as \$200,000.

There is a steel bridge flanked by two glaciers that cost a million and a half of dollars to build, and before a bit of that structure was reared the engineers spent three years in studying the peculiarities of those moving mountains of ice.

One of the most serious phases of Alaskan survey work is the problem of transportation. As Mr. Riggs says, "There is food to be carried for the party, which is a big item, and oats for the horses. At some time during the life of the Alaskan boundary survey every known form of transportation in the north was used. In summer we have been known to adopt the Indian practice and pack dogs. One year, at the close of the season, practically all our horses had died, and we journeyed down the White River for a distance of a hundred and ninety miles on rafts."

"Early one May a start was made from Whitehorse, first over a so-called wagon road where the six horse wagons were frequently bogged or upset, and then after even that semblance of a road had disappeared the fifty horses constituting our pack train were loaded with the camp outfit and supplies. Rivers and lakes were crossed at great risk on the rotten ice. Seventeen days out from Whitehorse the party crossed the last remaining ice bridge on the White River, and this was hardly accomplished ere the gorge broke through with a report like that of a hundred cannon and went swirling away in the swollen waters of that stream."

In running survey lines in that far away region, Mr. Riggs says, "Rivers filled with dangerous quicksands have to be crossed, mountains sealed at the risk of life and limb, and then comes the drudgery of crossing the bottomless swamps of the low lying lands. Horses mire down one after another and lie there with their heavy packs mutely gazing at the worn out packer, who after exhausting every known means to get the poor beast to its feet gives vent to his harrowed feelings in ornate blasphemy."



"Back-packing" up a steep mountain trail.



Steamer on Porcupine River, near Rampart House. It was here that smallpox menaced the party.

Treacherous Avalanches, Dangerous Quicksands and Frowning Glaciers Add to the Difficulties and Thrills of the Task

spect. After a while they thought it great fun. Returning from among the infected Indians we would get into an airtight tent, stick our heads out of an opening, while the whole interior was filled with the fumes of formaldehyde."

During that expedition, sent out by the United States Government under the auspices of the United States Coast and Geodetic Survey, one of the best surveyors was stricken with pneumonia. The country was well high barren, and the only natural fuel, and that scanty, was in the form of scrub willows. The sick man was virtually bound up in his sleeping bag, and for three weeks was unable, by himself, to get out of his extemporized bed. According to Mr. Riggs, "We gave him everything we had in the way of medicine, and still he recovered."

Heroism and the tragic are apt to go hand in hand in this survey work, and yet the public knows next to nothing about the dangers faced by its servants in that faraway region. Let us cite a single instance that occurred to one of Mr. Riggs's details.

It seems a small party of his associates landed on an island in the Alaska River and had the misfortune to have their canoe swept away by a sudden rise of water. Binding a few sticks of driftwood together to form a makeshift raft one of the men managed to work his way through the icy torrent to the neighboring main-

land. After three days of wandering over precipitous mountains and slippery glaciers he finally managed to crawl to one of the triangular stations or marks. He had just strength enough to push the signal out of plumb and then fainted away.

Happily the chief of the local party, some distance away, while pausing for the clouds to pass, by chance turned his telescope toward the deranged signal, and finding it out of line despatched some of his people in a canoe to restore it. In this manner the exhausted man was discovered, and a rescue party hastened away to the aid of his fellows on the island. For that heroism in the line of duty the man that braved that frigid stream became a physical and mental wreck.

The Government's railway will open up a very rich country. According to experts the wealth that has already been shipped out of the region is but the veriest scratchings from the surface of this vast treasure house of nature. But the road in its building will have to overcome many difficulties. The courage, grit and good red blood that has been drawn upon in running the survey are ample evidence of the character of the obstacles that must be battled with in laying the ties, running the rails and springing bridges as the line advances.

Even so, we shall have the route in time, and the achievement will add one more record to the abundant capacity of our people.

UNDERWEIGHT AS HEALTH SIGN

By DR. L. K. HIRSBERG.

THE hue and cry, the walling and whining and gnashing of teeth about the pros and cons of fatness, thinness, near obesity and pseudo-gauntness have for the most part been founded upon the medical averages gathered by life insurance statistics. Dr. H. A. Baker, the medical director of the Pittsburgh Life and Trust Company, now states that these former suppositions, namely, that the average build, the obesity or emaciation, of most people, represents the best health and longest life at each human age, are not true by a long shot.

Recent investigations show that the longest life and best health is not to be found among those of average build at any particular age, on the

as "over weight due to muscular development," "no excess fat present to explain over weight." The very fact that there is too much weight includes any escape from the fact of experience.

A tall man may escape the penalties of over weight better than a short man. Ill health and worse comes often to fat or chunky short men than to tall ones.

Men from 20 to 24 years of age can be accepted as healthy and for a long life fifty to sixty pounds above normal. Less excess weight is permissible between 25 years and 50 and increasingly less as you go up. There is one-third more fat between men between 25 and 50 who are fifty to sixty pounds heavier than they should be for a given build.

At the ages of 34 to 45 years, from 35 to 45 pounds heavier weight than a man should have doubles his risk of death. For any one above 35 who is thirty pounds heavier than the life insurance companies hereafter will consider a risk or raise their insurance rates.

At the age of 40 with a height of five feet eight inches, only such occupations as that of clergyman, lawyer, or teacher, total abstainers from alcohol and tobacco and those whose chest measurement is less than 40 inches permit of a life expectancy of more than 20 years.

However, the slightest use of gin, whiskey, rum, wine or other alcoholic beverages in one even a moderate amount makes him a bad bet as far as health, life and insurance are concerned.

Alcohol and slight overeating go hand in hand with approaching death or early death. Whenever the chest is larger than the chest, if the blood pressure is higher than normal, if a fat person, if the parents and grandparents were short lived and if the person is very much above weight, the private measures must be understood to reduce the weight.

There is no better way for a person above 30 to reduce their weight than by a sane diet combined with muscular work every night for at least 9 and 12 o'clock.

Three pounds a week can be lost sent to the scrap heap. There should be an utter avoidance of all hot oils, soups, greases, gravies, butter, salt, mustard, sauces, condiments and seasonings.

Meat absolutely bare of fat and without butter or lard may be eaten. Peas, spinach, and string beans, cut broth, and water, only, however, for two meals, may be drunk.

Teetotal abstinence from food, sugar, potatoes, cream, condensed milk, pastries, sweets, milk, butter, starches and bulky vegetables, fruits and fats must be rigidly maintained. Dancing or gymnastics were at night—if your heart and kidneys are sound—with drinks of sugarless albumen and lemonade or whey, a fatless piece of meat will do toward bringing you to a proper weight.

White River Canon.



A pack train in Alaska. The way most of the survey transporting is done.

extremes, and above all must they have the sturdiest of boots in which to battle over that rugged country. The surveyor must check his lines by suitable triangulations, and to do this it will be necessary for him frequently to stand or climb where peril surrounds him well nigh on every side. Indeed he will have to hold on by his eyelids or be something akin to a human fly, and besides getting himself there he must drag along his instruments.

Imagine yourself walking a tight-

rope with a bee threatening to alight upon your nose. Well, it is not exactly the bee that need be feared so much as the mosquito at this critical juncture. In Alaska, in the summer season, the air is pretty much alive with gnats and mosquitoes. These pests succeed in tormenting their way through every breach in one's clothing. They force their way under the necessary veils, and in their ravenous attack will even bite through shirts and gloves. As Mr. Riggs says, "The question has often been asked, 'What do mosquitoes live on in Alaska?' We know, we surveyors of the boundary line."

But the sun is not overkindly in Alaska, and there are heavy and well nigh continual rains, especially along the coast. The surveyor seizes upon every clear moment to take panoramic pictures from definite points, and from these, later in the shelter of his camp or the warmth of his winter office back in civilization, he works out the topography of his line and plans the way for the engineers. In lieu of this, he must toil along as best he can under the climatic handicaps, and by means of the flashing heliograph he sends his signals afar into the haze and talks with his distant fellows.

There is besides the menace of disease. This was instanced in the case of the boundary survey when an epidemic of smallpox broke out

among the Indians at Rampart House. "We gathered in all the Indians," said Mr. Riggs, "forced vaccination on them, isolated the diseased and issued supplies to the whole tribe of about two hundred. Ninety-two of the natives developed the fever. It was an anxious time, and only prompt action saved the day."

"We put all of the infected Indians on an island in the Porcupine and took away their boats so they could not get away. A daily inspection was made. I used to carry a sack of cheap candy to bribe the kids to be in-